Routine Product Set (RPS) Lists

April 15, 2004

INTRODUCTION

Each associated user will have the capability of creating and accessing numerous RPS Lists depending on the type of weather situation. On AWIPS, RPS lists are manipulated through the RPS list editor (see Figure 1). Every RPS list is designed carefully in order to minimize the amount of editing of the "Current List", which is the active list being used by the RPG during an ongoing weather event. Figure 2 shows a sample directory file listing of previously built RPS lists from the *File , Open* menu option on the RPS List Editor. This information sheet presents some of the considerations for RPS List determination and some "sample" RPS Lists for various weather scenarios. It is meant only as a guide to help the user design his or her own Lists. The considerations below apply to modems with connection speeds of 14.4Kbps, 33.6Kbps, 56Kbps, and those sites which have the RPG LAN-to-LAN connection.

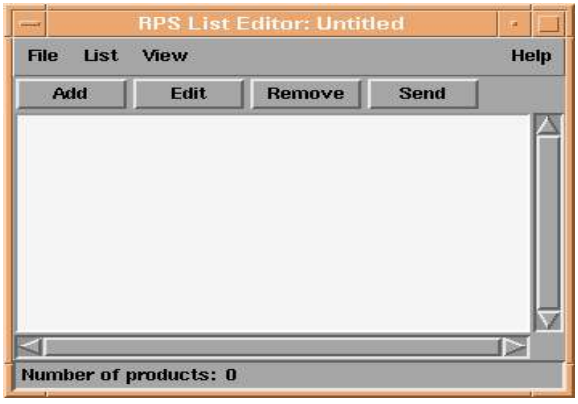

Figure 1. The RPS List Editor Dialog Box.

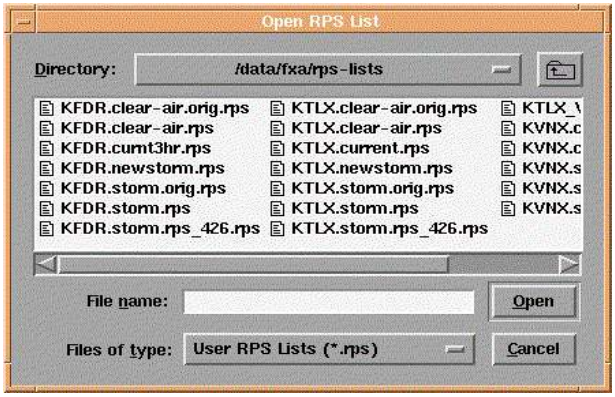

Figure 2. A sample list of available User RPS lists.

The RPS list editor application will ask you to select a VCP when creating a new list, and it saves the file with a ***VCPxx.rps*** name. In addition, it will not open any exiting file that lacks the VCPxx name string. In order to continue using any existing RPS files in rps-lists/, it is necessary to manually rename them. You will need to select an appropriate **VCP number** to add to the file name. The elevation angles of the given VCP must cover the angles found in the RPS list; otherwise, there may be editing problems. Elevation angles for all currently-available VCPs are listed in ***$FXA_NATL_CONFIG_DATA/nationalData/elevationLists.txt***. In most cases, VCP11 can be used for storm lists and VCP31 for clear air, but you should compare the actual tilts found in the RPS list with the contents of ***elevationLists.txt*** to select the VCP.

Once the proper VCP is identified, rename the files in ***/data/fxa/rps-lists***. For example, *cd /data/fxa/rps-lists mv rain.rps rain.VCP11.rps*. Now this file will be accessible via the RPS list editor program.

The **RPS List Editor View menu** lists all the new VCPs, not just "clear air" and "storm mode". When editing **any** existing list, you **must** select the VCP from the "View" menu. That allows the RPS list editor to have the correct list of elevation angles for the VCP you are working on.

In the **One Time Request** window, the elevations available for selection now depend on the time requested. When the "Latest" Time is selected, the current elevation angles of the RPG are provided. When the "Current" Time is selected, the default elevation angles are provided.

Instead of each individual tilt being on the menu, and the resultant sparse selection of "live" items,

depending on the VCP in use, the menu now lists "tilt bins" which will be more generally populated by current data. In addition, a change from, say, 3.5 to 3.4 degree tilt with a VCP change will be transparent, with a loop selecting the tilt needed for each frame from within the bin.

DEFAULT RPS LIST MANAGEMENT

Default RPS lists reside in ***/data/fxa/radar/lists***, and are named as ***KXXX.storm(clear-air).VCPyyy,*** where KXXX is the radar ID and yyy is the 2 or 3-digit VCP number.

You will NOT be able to edit the RPS lists in ***/data/fxa/radar/lists***, since they do not have a *.rps* extension. Plus, you would not want to as they would get overwritten on the next ***-auxFiles*** localization.

Therefore, you must edit them in ***/data/fxa/rps-lists***, and then do one of two things to make it active:

1. Copy the file to ***/data/fxa/radar/lists*** and ***/data/fxa/customFiles***, named appropriately
or,
2. Copy the file to ***/data/fxa/customFiles***, and run a ***-auxFiles*** localization on the ds.

SOME LOCAL RPS LIST CONSIDERATIONS

Routine Product Set Lists must be designed with several things in mind. The object of the list is to provide the user with products needed most often in order to best sample the atmosphere and thereby interpret the current weather situation. Things which must be taken into consideration are:

1. Weather Mode/VCP	Clear Air? Precipitation? Which VCP? You need to anticipate this information in order to know from what angles you have to choose.
2. Weather Situation	Stratiform? Convective? Low Topped? Winter Weather? Clear Air Return? You need to know this to determine which products and what elevation angles will be utilized.
3. Range	Where are the echoes located? Close to the RDA? Beyond 124 nm? Both? This information will determine which of the current elevation angles will sample the precipitation at the height you need, considering the range to the echo and the vertical extent of the echoes being sampled.
4. Procedures	Finally, your RPS List needs to be compatible with your AWIPS Procedures. Most often however, it will be the procedures which will be designed around the RPS Lists.

NATIONAL RPS LIST REQUIREMENTS

To support the central collection and distribution of radar products via the SBN/WAN at the NCF, a national set of products on four RPS Lists is required from each NWS office. The national set of products include radar products currently collected by NIDS vendors from all WSR-88D radars, commonly known as NIDS products, Archive Level III products, and any others identified for national collection.

Whenever a new RPS list is sent to the RPG, either automatically through a VCP mode change, or manually through a request sent from the AWIPS workstation (via the RPS List Editor), the national product set is combined with your local user-defined RPS list and resent to the RPG. Even if you modify your "Current" RPS List or build a new list, it will be combined with the national default list for the current operational mode. Duplicate products on the combined list will be dropped if a national product has a similar elevation angle (within 0.2 degrees) of your local list and all other parameters are the same.

Based upon the connection speed to the radar, there is one national RPS list for clear air mode which is used for both **VCP31** and **VCP32** and there is one national RPS list for storm mode which is used for **VCP11, VCP12, VCP21, VCP112 and VCP121.** The national RPS lists contain the standardized set of products which must be collected from every radar. There are **3 sets of paired RPS lists**. The first pair of clear air and storm RPS lists is utilized when there is a **LAN-to-LAN** connection between AWIPS and the radar. At this connection speed there is a maximum of **65 products** which can be requested from the radar. The second pair of clear air and storm RPS lists is utilized when there is a **56K X.25 modem** connection between AWIPS and the radar. At this connection speed there is a maximum of **50 products** which can be requested from the radar. The third pair of clear air and storm RPS lists is utilized when there is a **14.4K X.25 modem** connection between AWIPS and the radar. At this connection speed there is a maximum of **31 products** which can be requested from the radar. The file names for the **national RPS lists** are as follows:

NWS radars (LAN-to-LAN)	**DoD/FAA radars (X.25 at 56K)**	**DoD/FAA radars(X.25 at 33.6 or 14.4)**
rps-RPGOP-tcp.clear-air	rps-RPGOP.clear-air	rps-assoc.clear-air
rps-RPGOP-tcp.storm	rps-RPGOP.storm	rps-assoc.storm

The **/data/fxa/radar/lists/rps-RPGOP-tcp.clear-air** file contains 28 nationally standardized products which must be collected from every NWS radar. This allows the local site to have 37 additional products of their choosing before they reach the maximum of 65 products in the RPS list.

The **/data/fxa/radar/lists/rps-RPGOP-tcp.storm** file contains 34 nationally standardized products which must be collected from every NWS radar. This allows the local site to have 31 additional products of their choosing before they reach the maximum of 65 products in the RPS list.

PRODUCT CONSIDERATIONS

No predetermined RPS List will always do the job, no matter how carefully thought out it is. Some overlap is necessary in order to keep real-time editing at a minimum. Always be prepared to change and fine tune your RPS List to ensure you get the products you need. Also keep in mind how these changes will affect the procedures you use.

It is not always easy to decide which products to choose. Here are some considerations:

1. At least **4 elevations of reflectivity and velocity** (**Storm Relative**), are needed *at a minimum* for proper storm structure evaluation. The elevations chosen will depend on the VCP, range and vertical extent of the echoes. For storm interrogation, products representing low, middle and storm summit locations should be viewed. As line speed permits, even more elevation cuts are desirable.

2. Consider placing **several slices** of the **high-resolution (8-bit) Velocity (V)** on your RPS List. This will be especially useful if features are small in scale or at a significant distance from the radar (i.e, being severely impacted by aspect ratio). It will also be beneficial with boundary detection or if echoes are of weak intensity. Also you will need this product if it is your desire to view the **8-bit SRM** display generated on AWIPS. Be aware that for other than LAN-to-LAN connections, load-shedding could be an issue. The same can be said for the 8-

bit Reflectivity (Z) product.

3. You should **always** have a **high-res (8-bit) Base Reflectivity (Z)** product for each elevation that you have a Base Velocity, SRM, or 8-Bit Velocity product. Both types of base data are needed for proper interpretation.

4. **Storm Relative Velocity Map (SRM**) subtracts the average (or user selected) motion of all detected storms from the Base Velocity product so that flow relative to the storms is presented. This product is best utilized when circulations are expected and storms are fast moving. Note that in order to view the AWIPS generated 8-bit SRM display, you must have the 8-bit Velocity product in your database. Do not use this product if interested in ground relative winds, like those associated with gust fronts and high wind events. A Base Velocity product or 8-Bit Velocity product is more suited for ground relative wind situations.

5. AWIPS will construct base velocity/and base reflectivity displays using the best resolution data that are available in the database. Therefore, if you desire to have the higher resolutions present in these displays, they must be included on the RPS List. For example, if you only have a 2.2nm resolution Composite Reflectivity product in the database, the product you display will have only that resolution. If however you have both a .54 nm and a 2.2 nm resolution product in the database, then the CR display will show a combination of both resolutions, using .54nm out to 124nm and 2.2 nm from 124 to 248nm.

6. TVS and MESO products should be included on all RPS Lists anytime convection is expected. They should be checked every volume scan or displayed with other products (SRM, for ex) to prevent any unanticipated detections from being missed.
Note: These should also be set for alerts for the same reason, keeping in mind however that for RPG alerts, only the first (of many continuous) detections will be alerted for until there is a volume scan free of either detection. (See documentation on “Alerts” for more details)

7. The Storm Track Information (STI) product is useful out to 186 nm and may therefore be valuable on a Clear Air RPS List to monitor storms outside of 124 nm.

8. Precipitation algorithms will run while the radar is still in Mode B (clear air) when Category 2 precipitation is assigned. You may therefore choose to include precipitation products on your "Clear Air" RPS List.

Note: Resolutions in AWIPS are listed in kilometers instead of nautical miles. Resolutions in nm are listed on the sample RPS Lists. The equivalent values used for both are:

4km = 2.2nm, 2km = 1.1nm, 1km = .54nm , .5km = .27nm, .25km =.13nm

CHANGES IN OB3 RPS LIST MANAGEMENT

After OB3 is installed on your AWIPS system the OB2 generic baseline /awips/fxa/data/KXXX.clear-air and /awips/fxa/data/KXXX.storm RPS lists are no longer utilized by the ***./mainScript.csh -auxFiles*** localization. The OB2 KXXX.clear-air and KXXX.storm files have been replaced by an OB3 set of VCP specific RPS lists. The names for the new OB3 generic baseline RPS lists are:

OB2	**OB3 RPS Specific Replacement Files**
/awips/fxa/data/**KXXX.clear-air**	/awips/fxa/data/**KXXX.clear-air.VCP31**
	/awips/fxa/data/**KXXX.clear-air.VCP32**
/awips/fxa/data/**KXXX.storm**	/awips/fxa/data/**KXXX.storm.VCP11**
	/awips/fxa/data/**KXXX.storm.VCP112**
	/awips/fxa/data/**KXXX.storm.VCP12**
	/awips/fxa/data/**KXXX.storm.VCP121**
	/awips/fxa/data/**KXXX.storm.VCP21**

The new set of OB3 KXXX.clear-air.VCP* and KXXX.storm.VCP* files are generic baseline RPS lists. The generic baseline OB3 KXXX.clear-air.VCP* and KXXX.storm.VCP* files are used by the ***./mainScript.csh -auxFiles*** localization only if you do not have a customized RPS list for your radar(s). I would not make any changes to the generic baseline set of KXXX.clear-air. VCP* and KXXX.storm.VCP* files because it is possible that a future software upgrade will overwrite these files and thus your site specific changes will be lost.

If you customize your RPS lists and you want the ***./mainScript.csh -auxFiles*** localization to preserve your customized RPS lists, place the customized RPS lists in the **/data/fxa/customFiles** directory. For example if WFO PQR wants to save customized RPS lists for the KRTX radar, save the customized RPS lists as:

/data/fxa/customFiles/**KRTX**.storm.VCP12
/data/fxa/customFiles/**KRTX**.clear-air.VCP31
/data/fxa/customFiles/**KRTX**.clear-air.VCP32
/data/fxa/customFiles/**KRTX**.maint
/data/fxa/customFiles/**KRTX.**storm.VCP11
/data/fxa/customFiles/**KRTX**.storm.VCP112
/data/fxa/customFiles/**KRTX**.storm.VCP121
/data/fxa/customFiles/**KRTX**.storm.VCP21

When the ***./mainScript.csh -auxFiles*** localization is run, the customized RPS lists in the /data/fxa/customFiles directory will supersede the generic baseline RPS lists in the /awips/fxa/data directory.

References:

Information on RPS list management compiled from Wayne Martin (AWIPS SST), and the OB3 User's Manual.